02.0 FUNDAMENTALS OF TECHNOLOGY

Prerequisite: None
Fundamentals of Technology is a prerequisite course for most of the Technology Education systems. Communication skills and tools are the major focus of this course. These same skills are central to all subsequent technology courses. The computer and other electronic devices are necessary for teaching an understanding of contemporary communications, manufacturing, power/energy/transportation and construction systems. An engineering focus of problem solving requires students to define a given problem, conduct appropriate research, develop solutions to the problem, construct prototypes, and evaluate their work.

Fundamentals of Technology is designed to introduce students to those principles and skills used in subsequent technology courses. Students learn to sketch solutions to problems, create technical drawings and presentations, build models, and apply creative problem solving methods. Emphasis is placed on accessing and communicating information, using simple and complex tools in a safe manner, and increasing the students' awareness of the historical and contemporary implications of technology. Students are introduced to computer-aided graphics, design software, and computer-aided manufacturing. Students develop an understanding of the tools, techniques, and processes of technology using design principles, computers, problem solving and model making.

PROGRAM TASK LISTING EFFECTIVE DATE: June 30, 1995

PROGRAM AREA: Technology Education

PROGRAM TITLE: Fundamentals of Technology

IDAHO CODE NUMBER: TE 1905

02.01 Demonstrate proper and safe procedures while working with technological tools, apparatus, equipment, systems and materials.

02.02 Exhibit positive human relations and leadership skills (standard leadership skills task list).

02.03 Demonstrate computer application and literacy.

02.04 Integrate basic academic skills and concepts.

02.05 List requisites and employment opportunities for employment in today's and our future technological world.

02.06 Identify evolving technologies in our technological world.

02.07 Demonstrate and apply design/problem-solving processes.

02.08 Demonstrate basic knowledge of communications technology.

02.09 Demonstrate basic knowledge of transportation systems.

02.10 Demonstrate knowledge of robotics.

02.11 Demonstrate knowledge of power and energy.

02.12 Demonstrate basic knowledge of construction technology.

02.13 Demonstrate a basic knowledge of manufacturing technology.

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02.01 DEMONSTRATE PROPER AND SAFE PROCEDURES WHILE WORKING WITH TECHNOLOGICAL TOOLS, APPARATUS, EQUIPMENT, SYSTEMS AND MATERIALS--
The student will be able to:

1. Follow laboratory safety rules and procedures.
2. Demonstrate good housekeeping within total laboratory.
3. Conduct laboratory activities and equipment operations in a safe manner.
4. Exercise care and respect for all tools, equipment, and materials.
5. Identify color-coding safety standards.
6. Safely use hand tools and power equipment.
7. Explain fire prevention and safety precautions and practices for extinguishing fires.
8. Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.

02.02 EXHIBIT POSITIVE HUMAN RELATIONS AND LEADERSHIP SKILLS (STANDARD LEADERSHIP SKILLS TASK LIST)--
The student will be able to:

1. Work cooperatively with others.
2. Demonstrate ability to do individual and cooperative planning of

an activity.

02.03 DEMONSTRATE COMPUTER APPLICATION AND LITERACY--
The student will be able to:

1. Define terms related to computer parts and usage.
2. List ways in which computers are used in technology.
3. Discuss advantages and disadvantages in the use of computers.
4. Demonstrate the application of a computer.

02.04 INTEGRATE BASIC ACADEMIC SKILLS AND CONCEPTS--
The student will be able to:

1. Find, understand, and apply information from a variety of sources, written and electronic, to produce a technical report.
2. Read and follow complex written instructions.
3. Answer and ask questions coherently and concisely, and follow spoken instructions.
4. Make and use measurements in both traditional and metric units.
5. Solve work-related problems involving basic arithmetic.

02.05 LIST REQUISITES AND EMPLOYMENT OPPORTUNITIES FOR EMPLOYMENT IN TODAY'S AND OUR FUTURE TECHNOLOGICAL WORLD--
The student will be able to:

1. List occupations, job requirements and employment opportunities in communications technology.
2. List occupations, job requirements and employment opportunities in construction technology.
3. List occupations, job requirements and employment opportunities in manufacturing technology.
4. List occupations, job requirements and employment opportunities in energy, power, and transportation technology.

02.06 IDENTIFY EVOLVING TECHNOLOGIES IN OUR TECHNOLOGICAL WORLD--
The student will be able to:

1. List evolving technologies.
2. Report on a recent or evolving technology.

02.07 DEMONSTRATE AND APPLY DESIGN/PROBLEM-SOLVING PROCESSES--
The student will be able to:

1. Describe and explain steps in the design/problem-solving process.
2. Propose solutions to given problems.
3. Design and implement the optimal solution to a given problem.

02.08 DEMONSTRATE BASIC KNOWLEDGE OF COMMUNICATIONS TECHNOLOGY--
The student will be able to:

1. Discuss the history of communications systems.
2. Identify and apply common terms and definitions associated with communications.
3. Discuss the use of computers in communications.
4. Demonstrate computer literacy through use and application of computers in communication systems.
5. Understand the use and function of telecommunication components.
6. Illustrate knowledge of graphic arts concepts.
7. Demonstrate knowledge of drafting/design concepts, manual and electronic.
8. Understand how information is exchanged between humans and machines.
9. Discuss the influences and effects of communications technology on society, culture and the environment.

02.09 DEMONSTRATE BASIC KNOWLEDGE OF TRANSPORTATION SYSTEMS--
The student will be able to:

1. Discuss the history of transportation (Systems/Future/Impacts).
2. Discuss and demonstrate Land Transportation (Systems/Future/Impacts).
3. Discuss and demonstrate Water Transportation (Systems/Future/Impacts).
4. Discuss and demonstrate Atmospheric Transportation (Systems/Future/Impacts).
5. Discuss and demonstrate Space Transportation (Systems/Future/Impacts).
6. Discuss the future of Transportation.

02.10 DEMONSTRATE KNOWLEDGE OF ROBOTICS--
The student will be able to:

1. Define the term "Robots".
2. Discuss uses of Robots.
3. Define common parts of a Robot.
4. Demonstrate/construct a Robot.

02.11 DEMONSTRATE KNOWLEDGE OF POWER AND ENERGY--
The student will be able to:

1. Identify Fossil Fuels and uses.
2. Define wind and water resources.
3. Demonstrate a wind or water resource.
4. Define/discuss Solar Energy.
5. Define/discuss Nuclear Energy resources.
6. Discuss Energy Conservation.
7. Demonstrate application of power/energy to technology systems.
8. Define/demonstrate basic electronic/electrical theory.

02.12 DEMONSTRATE BASIC KNOWLEDGE OF CONSTRUCTION TECHNOLOGY--
The student will be able to:

1. Apply blueprint reading skills.
2. Discuss/demonstrate basic construction concepts/techniques.
3. Identify construction materials and processes.
4. Discuss uses of new technology in construction.
5. Define basic construction vocabulary.
6. Discuss the future of construction.
7. Discuss the types of construction (land, space, and underwater).

02.13 DEMONSTRATE A BASIC KNOWLEDGE OF MANUFACTURING TECHNOLOGY--
The student will be able to:

1. Demonstrate the essential elements and organization of the free enterprise system.
2. Discuss the history of Manufacturing.
3. Identify types of Production Systems.
4. Demonstrate/define Research and Development.
5. Discuss financial aspects of Manufacturing.
6. Define Industrial Relations.
7. Define materials, material processing, material testing, and material recycling.
8. Discuss/explore traditional and innovative equipment.
9. Discuss/demonstrate the use of robotics/computers (CAM) in manufacturing.
10. Demonstrate the mass production process.